

# Defense Technology Office



Defense Cooperation in Armaments  
(DCA) in Japan

# Agenda

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- Defense Technology Office (DTO) Mission
- Japan Background
- DCA trends in Japan
- DTO strategy
- DTO activities
- Cooperative R&D Programs
- Challenges

# Defense Technology Office (DTO) Mission

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- Represent the Undersecretary of Defense for Acquisition, Technology and Logistics (USD/AT&L), Commander, U.S. Pacific Command (PACOM), the military departments (MILDEPs), and the U.S. Country Team to the Government of Japan (GOJ); serve as a primary source of information on Japan's defense R&D and acquisition activities
- Pursue and support arrangements for the Department of Defense (DoD) and Japan Defense Agency (JDA) to develop technologies and formulate systems acquisition strategies that support U.S. and bilateral strategic objectives
- Identify Japanese technology of potential benefit to DoD and facilitate access through government-to-government and government-to-industry liaison
- Identify potential U.S.-Japan cooperative R&D programs and facilitate effective communications for ongoing programs

# Japan Background Data

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## Economy (JFY '04)

*Source: CIA World Factbook*

Population: 127 million

GDP (PPP): \$3.745 trillion

Per capita GDP: \$29,400

Growth rate: 2.9%

Inflation: -0.1%

Gov't revenues: \$1.401 trillion

Gov't expenditures: \$1.748 trillion

Public debt: 164% of GDP

R&D expenditure: over \$100 billion

## Armed Forces:

GSDF: 153,000

Reserves: 8,000

MSDF: 42,600

ASDF: 44,200

Total: 248,800

as of 31 March 2005

## Defense Expenditures (JFY '04)

Defense Budget: \$45.841 billion  
(equivalent to <1% of GDP)

Procurement: \$8.5 Billion (18.6%)

R&D: \$1.238 Billion (2.7%)

Host nation support: \$4.5 Billion (9.6%)

## Major Armed Forces Units (2004)

- Ground: 9 Divisions, 8 Brigades,  
900 tanks, 900 artillery pieces

- Maritime: 53 destroyers,  
16 submarines, 160 aircraft

- Air: 300 fighters, 390 other aircraft,  
20 Early warning squadrons

# Common Equipment

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**F-15J Fighter**  
**C-130 Transport**  
**AWACS**



**SH-60J/UH-60J/UH-60JA Helicopter**  
**AH-1S/AH-64D Attack Helicopters**  
**CH-47J transport Helicopter**  
**UH-1H/UH-1J Utility Helicopter**  
**MH-53 AMCSM Helicopter**  
**OH-6J/OH-6D Light Helicopter**



**E-2C Hawkeye**  
**P-3C/EP-3C**  
**Link 11/16**  
**GCCS/OED**  
**SATCOM**



**M110A2 SP 8" Howitzer**  
**120 Main Gun (German)**  
**I-Hawk Air Defense System**  
**Patriot Air Defense System**  
**Multiple Launch Rocket System**  
**TOW Anti-Armor Missile System**

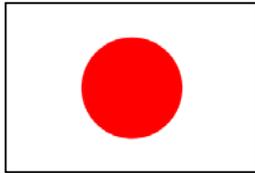


**AIM/RIM-7F Sparrow Missile**  
**AIM-9L Sidewinder Missile**  
**AMRAAM**



**CIWS PHALANX**  
**MK-46 Mod 5 Torpedo**  
**Aegis Shipboard Air Defense system**  
**Standard Missile**  
**MK 41 Vertical Launch System**  
**Harpoon Anti-Ship Missile**  
**Vertical Launch ASROC (VLA)**  
**MK 54 5" Naval Gun**  
**MK 75 76 mm Naval Gun (Italian)**  
**Naval Surge/Fire Control Radars**

# Combining Technological Strengths



**Digital, Optical**

**Displays**



**Robotics**



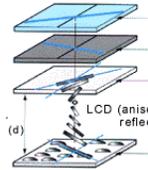
**Miniaturization**



**Manufacturing**



**Materials**



**Military technology**



**Software**

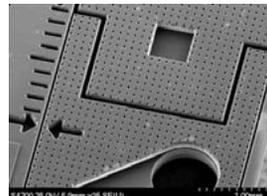


**Systems Integration**

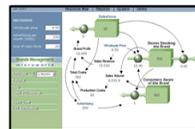


**MEMS**

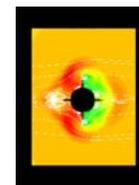
(Micro-Electronic Mechanical Systems)



**Simulations**



**Basic Research**



**Aerospace**



# Japan's Changing DCA Landscape (1/2)

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- Since 1967 - Arms exports not permitted to:
  - Communist Bloc countries
  - Countries to which arms exports are prohibited by UN resolution
  - Countries involved in or likely to become involved in international conflicts
- Since 1976, current GOJ policy is that:
  - Equipment and technology exclusively related to military use are considered as “arms”
  - Items with a valid commercial application are “commercial”
  - Restricts technology and hardware transfers to third countries
- Nov 1983: Japan agrees to permit the export of military technology to the U.S. as an exception, but not hardware

# Japan's Changing DCA Landscape (2/2)

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- Until recently, DCA with Japan has been primarily limited to joint research, but is transitioning to joint development and co-production
- Dec 03: Chief Cabinet Secretary announces Japan's adoption of Ballistic Missile Defense
- Dec 04: Chief Cabinet Secretary announces exceptions to arms export control policy
- Upcoming BMD cooperative projects—AEGIS radar upgrade, AEGIS Open Architecture, 21-inch interceptor

*Ballistic Missile Defense (BMD) cooperation provides tremendous opportunities for bilateral technical exchange and cost-sharing*

# Why DCA with Japan?

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- Important security partner—U.S. desires a closer relationship
- Japan is strong in almost all militarily critical technologies
  - Leads U.S. in many areas such as Nanotechnology—annual GOJ Nanotech investment of \$800 Million
- 2<sup>nd</sup> largest economy in the world ; GDP ~ \$4 Trillion
- Annual national R&D expenditure of over \$100 Billion
  - GOJ expenditure of \$1.24 Billion for defense R&D; supplemented by industry
  - Great potential for increased defense R&D expenditures
- Holds 42% of all foreign patents in the U.S.— stands out as #1
  - Germany is #2 at 9.1%
- Annual defense budget of \$45 Billion
  - while less than 1% of GDP, is still larger than those of the UK, Germany, Italy, France or Canada

# Objectives of DoD's Asia-Pacific DCA Strategy

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- **Political**
  - Strengthen alliances and relationships, promote international legitimacy in coalition operations
- **Operational**
  - Achieve interoperability for combined operations
  - Encourage acquisition of U.S. systems
- **Economic**
  - Reduce U.S. expenses for research, development, production, and support
- **Technical**
  - Ensure access to the best technologies
- **Industrial**
  - Bolster domestic and allied industrial bases

# Japan DCA Strategy

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## ENDS

- POL—Strengthen U.S.-Japan security relationship
- OPNL—Increase operational capabilities of U.S.-Jpn forces and enhance interoperability
- ECON—Create opportunities for/facilitate U.S.-Japan cooperative acquisition projects
- TECH—Access cutting-edge Japanese technology
- INDUS—Support U.S.-Jpn industrial bases; promote mutually beneficial industry-to-industry cooperation

## MEANS

- DTO organization/staffing/funding
- MILDEP IPOs, Program Offices, other acquisition/R&D organizations
- OUSD/AT&L, other OSD/DOD orgs (DDRE, ISA, ISP, C3I, etc.)
- U.S. & Japan government agencies
- PACOM
- USFJ, component commands
- Service labs, research organizations
- JCR LNO
- ESC/OL

## WAYS

1. U.S. – Japan S&TF Armaments Cooperation Framework
2. Service-Service and Strategic Requirements Dialogue
3. Data Exchange Annexes
4. Engineer and Scientist Exchange Program
5. Contact with industry organizations
6. Periodic DCA Info Exchange Mtgs
7. Pursue Expanded Exceptions to 3Ps
8. Foreign Comparative Testing Program
9. Support JDA Involvement in PACOM ACTD/ other Programs
10. Pursue Strategic Logistics Relationship with Japan
11. In-Country Technology Search/Industry Visits

# DTO Priorities

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1. S&TF and BMD-related matters and those associated with potential and newly-established cooperative programs
2. Matters associated with mature cooperative programs
3. Service-to-Service requirements, MILDEP, and Program Office matters, meetings and visits (i.e. Data Exchange Agreement (DEA) meetings, PACOM Advanced Concept Technology Demonstration (ACTD) Conference); technology search and industry matters
4. Foreign Commercial Testing (FCT), Engineer and Scientist Exchange Program (ESEP), and Strategic Logistics
5. DCA training and attendance at DCA-related conferences

# Cooperative R&D Programs

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## Completed Programs

- Ducted Rocket Engine (1999)
- Eye-safe Laser Radar (2001)
- Advanced Steel Technology (2001)
- ACES II Ejection Seat (2002)
- Ceramic Engine (2002)
- Low Vulnerability Ammunition (2003)
- Shallow Water Acoustics (2003)
- Advanced Hybrid Propulsion (2004)
- PX-MMA Interoperability Study (2004)

## Current Programs

- Ballistic Missile Defense Technology
- P-8A/P-X Interoperability Working Group
- Software Radio (JTRS)
- Advanced Hull Materials & Structures Technology
- GPS/QZSS Technology
- Chemical/Biological Defense

## Data Exchange Annexes (DEAs)

- 32 active DEAs; 17 Maritime, 10 Ground, 5 Air

## Engineer and Scientist Exchange Program (ESEP)

- Since 2003, two Japanese researchers have worked in the U.S.; another will go in 2006-07

# Defense Technology Office

